# MEMORANDUM

CH2MHILL



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**DATE:** July 9, 1992

**SUBJECT:** Addendum to the **Final Regional Groundwater Field Sampling Plan Remedial Investigation, San Fernando Valley Basin Burbank, Glendale, and Los Angeles California**, December 1991

**PROJECT:** SFO69127.02.02

As discussed with EPA (CH2M HILL, June 20, 1992) gross alpha radioactivity above the state and federal MCL for drinking water has been detected in groundwater samples from the Glendale study area. The purpose of this memorandum (Addendum No. 1) is to address issues pertaining to groundwater sample analytical procedures for radionuclide analyses in addition to current analytical procedures for gross alpha and gross beta analysis.

## Radionuclide Analyses

Available groundwater data is only available for gross alpha, gross beta, and radon. The specific radioactive components contributing to the gross values have not been measured. The SAP dated December 1991 presents analytical methods for analyzing groundwater samples for the above mentioned analytes. These procedures are contained in Appendix C.

The prevailing regulations (40 CFR Section 141.15) defines gross alpha activity to include Radium-226 (Ra-226) and other alpha emitters, but exclude Uranium-238 (U-238) and Radon-222 (Rn-222). The gross alpha test includes Ra-226 and U-238, but excludes Rn-222. Therefore, to compare the gross alpha data to the MCL, the uranium activity must be subtracted from the gross alpha values. Isotopes of radium are regulated separately under 40 CFR Section 141.15.

The required SAS procedures for analysis of the radionuclides for radium, uranium, strontium, and tritium are covered in EPA publication 600/4-80-032. The methods required for these SAS analyses are summarized in Table 1-A. These methods along with the required accuracy and precision are included as an attachment to this addendum.

| Table 1-A<br>Radionuclide Parameters and<br>Analytical Procedures | |
|---|---|
| **Parameter** | **Method** |
| Gross Alpha/Beta Radioactivity | EPA 900.0[a] |
| Gross Radium | EPA 900.1[a] |
| Radium-226 | EPA 903.1[a] |
| Uranium | EPA 908.0[a] |
| Strontium-89,90 | EPA 905.0[a] |
| Tritium | EPA 906.0[a] |
| Radon | EPA 600/2-87-082[b] |

[a] EPA. September 1987. EPA 600/4-80-032. Prescribed Procedures of Measurement of Radioactivity in Drinking Water. p. 1-102.
[b] EPA. September 1987. EPA 600/2-87-082. Appendix B: The Determination of Radon in Drinking Water by Liquid Scintillation, p.22. Appendix D: Analytical Test Procedure, Radon/Water concentration Analysis of Grab Samples Using Lucas Scintillation Cell Detection. p.27.